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=> b reg
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DICTIONARY FILE UPDATES:  25 APR 2006  HIGHEST RN 881879-55-6

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*                                                                    *
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* the IDE default display format and the ED field has been added,    *
* effective March 20, 2005.  A new display format, IDERL, is now     *
* available and contains the CA role and document type information.  *
*                                                                    *
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L14             STR
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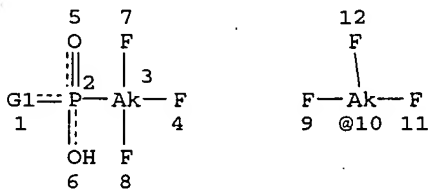


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DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS  12

STEREO ATTRIBUTES: NONE
L16         338 SEA FILE=REGISTRY SSS FUL L14

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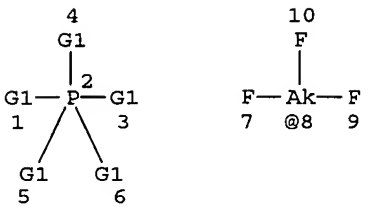


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NUMBER OF NODES IS  10

STEREO ATTRIBUTES: NONE
L19       60606 SEA FILE=REGISTRY SSS FUL L17

100.0% PROCESSED   152585 ITERATIONS  (    13 INCOMPLETE)    60606 ANSWERS
SEARCH TIME: 00.00.08


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YOU HAVE REQUESTED DATA FROM FILE 'HCAPLUS' - CONTINUE? (Y)/N:n


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FILE 'HCAPLUS' ENTERED AT 16:41:21 ON 26 APR 2006
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FILE LAST UPDATED: 25 Apr 2006  (20060425/ED)

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 This file contains CAS Registry Numbers for easy and accurate
 substance identification.

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L22  ANSWER 1 OF 4  HCAPLUS  COPYRIGHT 2006 ACS on STN
AN   2005:811732  HCAPLUS
DN   143:231382
ED   Entered STN:  18 Aug 2005
TI   Method for producing guanidinium salts.
IN   Ignatyev, Nikolai; Welz-Biermann, Urs; Bissky, German;
```

Willner, Helge
PA Merck Patent G.m.b.H., Germany
SO PCT Int. Appl., 74 pp.
CODEN: PIXXD2
DT Patent
LA German
IC ICM C07C-0277/08
ICS C07C-0279/04; C07D-0233/48; C07D-0233/28; C07C-0211/15
CC 41-5 (Dyes, Organic Pigments, Fluorescent Brighteners, and Photographic Sensitizers)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO2005075413	A1	20050818	2005WO-EP00389	20050117
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
DE102004005404	A1	20050825	DE 2004-102004005404	20040203

PRAI DE 2004-102004005404 A 20040203

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
WO 2005075413	ICM	C07C-0277/08
	ICS	C07C-0279/04; C07D-0233/48; C07D-0233/28; C07C-0211/15
	IPCI	C07C0277-08 [ICM,7]; C07C0279-04 [ICS,7]; C07D0233-48 [ICS,7]; C07D0233-28 [ICS,7]; C07C0211-15 [ICS,7]
	IPCR	C07C0211-00 [I,C]; C07C0211-15 [I,A]; C07C0277-00 [I,C]; C07C0277-08 [I,A]; C07C0279-00 [N,C]; C07C0279-04 [N,A]; C07D0233-00 [I,C]; C07D0233-28 [I,A]; C07D0233-48 [I,A]
DE102004005404	IPCI	C07C0277-00 [ICM,7]; C07C0279-00 [ICS,7]; C07D0233-02 [ICS,7]; C07C0275-00 [ICS,7]
	IPCR	C07C0211-00 [I,C]; C07C0211-15 [I,A]; C07C0277-00 [I,C]; C07C0277-08 [I,A]; C07C0279-00 [N,C]; C07C0279-04 [N,A]; C07D0233-00 [I,C]; C07D0233-28 [I,A]; C07D0233-48 [I,A]
	ECLA	C07D233/28; C07C211/15; C07C277/08; C07D233/48

AB Guanidinium salts (sulfonates, alkyl or aryl sulfates, hydrogen sulfates, imides, methanides, carboxylates, phosphates, phosphinates, phosphonates, borates, thiocyanates, perchlorates, fluorosilicates or nitrates) useful as ionic liqs., non-aqueous electrolytes and surfactants are manufacture in 2-step method. Thus, 2,2-dichloro-4,5-dihydro-1,3-dimethyl-1H-imidazolium was reacted with bis(pentafluoroethyl)phosphinic acid to give 2-chloro-1,3-dimethylimidazolinium tris(pentafluoroethyl)trifluorophosphat e, which was reacted with diethylamine and NH3 to give 2-amino-1,3-dimethylimidazolium tris(pentafluoroethyl)trifluorophosphate.

ST guanidinium salt manuf; dichlorodihydrodimethylimidazolium bispentafluoroethylphosphinic acid diethylamine
IT Ionic liquids
Surfactants
(method for producing guanidinium salts)
IT Electrolytes
(non-aqueous; method for producing guanidinium salts)
IT 862564-83-8P
RL: IMF (Industrial manufacture); PREP (Preparation)
(Method for producing guanidinium salts)
IT 45514-40-7P 68897-49-4P 70976-89-5P 73159-62-3P 805247-46-5P
805247-48-7P 805247-58-9P 805247-64-7P 848629-59-4P

862564-74-7P 862564-76-9P 862564-78-1P
862564-80-5P 862564-82-7P 862564-85-0P 862564-87-2P
862564-90-7P 862564-93-0P 862564-94-1P 862564-96-3P
862564-99-6P 862565-00-2P 862565-01-3P 862565-03-5P
RL: **IMF (Industrial manufacture)**; **PREP (Preparation)**
(method for producing guanidinium salts)

IT 105142-17-4P **805247-57-8P 805247-63-6P**
862564-71-4P 862564-73-6P 862564-77-0P 862564-84-9P
862564-86-1P 862564-88-3P 862564-89-4P 862564-91-8P 862564-92-9P
862564-95-2P 862564-97-4P **862564-98-5P** 862565-02-4P
RL: **IMF (Industrial manufacture)**; RCT (Reactant); **PREP (Preparation)**; RACT (Reactant or reagent)
(method for producing guanidinium salts)

IT 76-05-1, Trifluoroacetic acid, reactions 101-83-7, Dicyclohexylamine 109-89-7, Diethylamine, reactions 111-92-2, Dibutylamine 512-42-5, Sodium methylsulfate 540-72-7, Sodium thiocyanate 996-50-9, N,N-Diethyltrimethylsilylamine 2926-30-9, Sodium trifluoromethanesulfonate 3585-33-9, Lithium dimethylamide 6192-52-5, p-Toluenesulfonic acid monohydrate 7601-89-0, Sodium perchlorate 7664-38-2, Phosphoric acid, reactions 7664-41-7, Ammonia, reactions 7664-93-9, Sulfuric acid, reactions 7697-37-2, Nitric acid, reactions 14984-76-0, Potassium, [bis(fluorosulfonyl)amino 32586-82-6, Sodium dimethylphosphate 55120-75-7, Calcium trifluoromethanesulfonate 90076-65-6, Lithium bis(trifluoromethanesulfonyl)imide 103321-11-5 108790-41-6 261356-49-4 343927-22-0
RL: RCT (Reactant); RACT (Reactant or reagent)
(method for producing guanidinium salts)

RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Carpino, L; WO--02094822 A 2002 HCAPLUS
(2) Carpino, L; JOURNAL OF ORGANIC CHEMISTRY 2001, V66(15), P5245 HCAPLUS
(3) Isobe, T; JOURNAL OF ORGANIC CHEMISTRY 1999, V64(19), P6989 HCAPLUS
(4) Kalinowski, H; CHEMISCHE BERICHTE 1979, V112(4), P1153 HCAPLUS
(5) Kantlehner, W; SYNTHESIS 1979, 5, P339 HCAPLUS
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(7) Matsuo, H; JP20-02260966 A CAPLUS 2002:693477 2002 HCAPLUS
(8) Mitsui Chemicals Inc; EP---0982299 A 2000 HCAPLUS
(9) Otto, M; JOURNAL OF THE AMERICAN CHEMICAL SOCIETY 2004, V126(4), P1016 HCAPLUS
(10) Przybylski, J; PL----170332 B1 CAPLUS 1997:280903 1996 HCAPLUS
(11) Schlama, T; JOURNAL OF ORGANIC CHEMISTRY 1997, V62, P4200 HCAPLUS

IT **805247-46-5P**
RL: **IMF (Industrial manufacture)**; **PREP (Preparation)**; **PREP (Preparation)**
(method for producing guanidinium salts)

RN 805247-46-5 HCAPLUS
CN Ethanaminium, N-[bis(dimethylamino)methylene]-N-ethyl-, trifluorotris(pentafluoroethyl)phosphate(1-) (9CI) (CA INDEX NAME)

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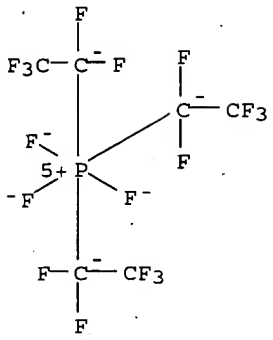
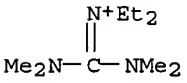
CRN 429679-87-8
CMF C6 F18 P
CCI CCS



CM 2

CRN 227096-59-5
CMF C9 H22 N3



L22 ANSWER 2 OF 4 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:1059308 HCAPLUS
DN 142:40429
ED Entered STN: 10 Dec 2004
TI Ionic liquids comprising uronium or thiouronium cations, their production and their use
IN **Ignatyev, Nikolai; Welz-Biermann, Urs**; Bissky, German; **Willner, Helge; Kucheryna, Andriy**
PA **Merck** Patent G.m.b.H., Germany
SO PCT Int. Appl., 46 pp.
CODEN: PIXXD2
DT Patent
LA German
IC ICM C07C-0275/70
ICS C07C-0335/32; C07F-0005/02; C07F-0009/30; C07F-0009/52
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
FAN.CNT 2

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO2004106287	A1	20041209	2004WO-EP05772	20040528
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
DE--10324891	A1	20041223	2003DE-1024891	20030602
DE--10325050	A1	20041223	2003DE-1025050	20030602
DE--10353758	A1	20050623	2003DE-1053758	20031117
CA---2527785	AA	20041209	2004CA-2527785	20040528
EP---1628952	A1	20060301	2004EP-0739427	20040528
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,				

IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK

PRAI	2003DE-1024891	A	20030602
	2003DE-1025050	A	20030602
	2003DE-1053758	A	20031117
	2004WO-EP05772	W	20040528

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
WO 2004106287	ICM	C07C-0275/70
	ICS	C07C-0335/32; C07F-0005/02; C07F-0009/30; C07F-0009/52
	IPCI	C07C0275-70 [ICM,7]; C07C0335-32 [ICS,7]; C07F0005-02 [ICS,7]; C07F0009-30 [ICS,7]; C07F0009-52 [ICS,7]
	IPCR	C07F0009-00 [I,C]; C07F0009-28 [I,A]; C07F0009-30 [I,A]
	ECLA	C07F009/28; C07F009/30A1+F
DE--10324891	IPCI	C07C0381-12 [ICM,7]; C07C0335-08 [ICS,7]
	IPCR	C07F0009-00 [I,C]; C07F0009-28 [I,A]; C07F0009-30 [I,A]
	ECLA	C07F009/28; C07F009/30A1+F
DE--10325050	IPCI	C07C0275-00 [ICM,7]; C07C0275-70 [ICS,7]; B01J0031-02 [ICS,7]
	IPCR	C07F0009-00 [I,C]; C07F0009-28 [I,A]; C07F0009-30 [I,A]
	ECLA	C07F009/28; C07F009/30A1+F
DE--10353758	IPCI	C07F0009-30 [ICM,7]; B01J0031-02 [ICS,7]; B01F0017-14 [ICS,7]; H01M0006-16 [ICS,7]; H01M0010-40 [ICS,7]
	IPCR	C07F0009-00 [I,C]; C07F0009-28 [I,A]; C07F0009-30 [I,A]
	ECLA	C07F009/28; C07F009/30A1+F
CA---2527785	IPCI	C07C0275-70 [I,A]; C07C0335-32 [I,A]; C07F0005-02 [I,A]; C07F0009-30 [I,A]; C07F0009-52 [I,A]
	ECLA	C07F009/28; C07F009/30A1+F
EP---1628952	IPCI	C07C0275-70 [ICM,7]; C07C0335-32 [ICS,7]; C07F0005-02 [ICS,7]; C07F0009-30 [ICS,7]; C07F0009-52 [ICS,7]
	ECLA	C07F009/28; C07F009/30A1+F

OS MARPAT 142:40429

AB The invention relates to stable uronium and thiouronium ionic liqs. prepared from urea and thiourea derivs. In an example, N,N,N',N'-tetramethyl-S-ethylisothiouronium triflate (I) was prepared from tetramethylthiourea and Et triflate. The ionic liquid I could then be treated with [(C2F5)3PF3]H.5H2O to give N,N,N',N'-tetramethyl-S-ethylisothiouronium tris(pentafluoroethyl)trifluorophosphate, another ionic liquid

ST ionic liq uronium thiouronium cation prodn

IT Ionic liquids
(production of ionic liqs. comprising uronium or thiouronium cations)

IT **805247-86-3P** **805247-87-4P** **805247-90-9P** **807612-90-4P** **807612-91-5P** **807612-92-6P**
RL: **IMF (Industrial manufacture)**; NUU (Other use, unclassified); **PREP (Preparation)**; USES (Uses)
(production of ionic liqs. comprising uronium or thiouronium cations)

IT **805247-84-1P** **805247-88-5P** **805247-89-6P**
RL: IMF (Industrial manufacture); NUU (Other use, unclassified); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(production of ionic liqs. comprising uronium or thiouronium cations)

IT 67-56-1, Methanol, reactions 333-27-7, Methyl triflate 368-39-8, Triethyloxonium tetrafluoroborate 425-75-2, Ethyl triflate 632-22-4, Tetramethylurea 2782-91-4, Tetramethylthiourea 6226-25-1, 2,2,2-Trifluoroethyl triflate 58431-32-6, Tris(pentafluoroethyl)phosphine oxide **482635-70-1**
RL: RCT (Reactant); RACT (Reactant or reagent)
(starting material; production of ionic liqs. comprising uronium or thiouronium cations)

RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Anon; CAN J CHEM 1983, V61, P235
(2) Anon; J GEN CHEM USSR 1988, V58(9), P1930
(3) Anon; J ORG CHEM 1995, V60(8), P2330
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Accession No 1999:396527 1999, P283 HCAPLUS
(7) Feith, B; CHEMISCHE BERICHTE; CAPLUS Accession No 1987:32793 1986, V119(11), P3276 HCAPLUS
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(11) Kunz Horst Prof Dr; DE--19648125 A 1998 HCAPLUS
(12) Neibecker, D; INORGANIC CHEMISTRY 1980, V19(12), P3725 HCAPLUS
(13) Neibecker, D; TETRAHEDRON LETTERS 1977, 27, P2351 HCAPLUS

IT **805247-90-9P**
RL: **IMF (Industrial manufacture)**; NUU (Other use, unclassified); **PREP (Preparation)**; USES (Uses)
(production of ionic liqs. comprising uronium or thiouronium cations)

RN 805247-90-9 HCAPLUS
CN Methanaminium, N-[(dimethylamino)methoxymethylene]-N-methyl-, salt with bis(pentafluoroethyl)phosphinic acid (1:1) (9CI) (CA INDEX NAME)

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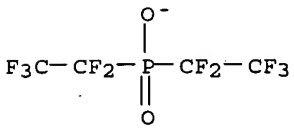
CRN 613232-20-5
CMF C4 F10 O2 P



CM 2

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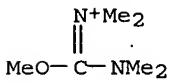

L22 ANSWER 3 OF 4 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:837097 HCAPLUS
DN 139:323660
ED Entered STN: 24 Oct 2003
TI Process for production of monohydro(perfluoro)alkanes, bis(perfluoroalkyl)phosphinates and perfluoroalkylphosphonates by treatment of perfluoroalkylphosphoranes with bases
IN **Ignatyev, Nikolai; Weiden, Michael; Welz-Biermann, Urs; Heider, Udo; Sartori, Peter; Kucheryna, Andriy; Willner, Helge**
PA **Merck** Patent G.m.b.H., Germany
SO PCT Int. Appl., 49 pp.
CODEN: PIXXD2
DT Patent
LA German
IC ICM C07F-0009/30
ICS C07F-0009/38; C07C-0017/35; C07C-0019/08; C07C-0211/62; C07F-0009/54; C07D-0233/58
CC 29-7 (Organometallic and Organometalloidal Compounds)
Section cross-reference(s): 23, 46
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO2003087111	A1	20031023	2003WO-EP02744	20030317 <--
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	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
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	CA---2482657	AA	20031023	2003CA-2482657	20030317 <--
	AU2003222764	A1	20031027	2003AU-0222764	20030317 <--
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	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
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	2002DE-1020547	A	20020508 <--		
	2003WO-EP02744	W	20030317 <--		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
WO 2003087111	ICM	C07F-0009/30
	ICS	C07F-0009/38; C07C-0017/35; C07C-0019/08; C07C-0211/62; C07F-0009/54; C07D-0233/58
	IPCI	C07F0009-30 [ICM,7]; C07F0009-38 [ICS,7]; C07C0017-35 [ICS,7]; C07C0019-08 [ICS,7]; C07C0211-62 [ICS,7]; C07F0009-54 [ICS,7]; C07D0233-58 [ICS,7]
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	ECLA	B01F017/00R; B01J031/02D; B01J031/02E2; B01J031/02E4; C07C017/361+19/08; C07C017/38; C07C211/63; C07D233/54C; C07D521/00B1C3; C07F009/30A1+F; C07F009/38A1+F; C07F009/54A1+D
DE--10220547	IPCI	C07F0009-38 [ICM,7]; C07F0009-30 [ICS,7]; C07C0017-00 [ICS,7]; C07C0019-08 [ICS,7]; B01J0031-02 [ICS,7]; B01F0017-14 [ICS,7]; C07D0213-02 [ICS,7]; C07D0237-06 [ICS,7]; C07D0239-24 [ICS,7]; C07D0241-10 [ICS,7]; C07D0233-54 [ICS,7]; C07D0277-20 [ICS,7]
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	ECLA	B01J031/02D; B01J031/02E2; B01J031/02E4; C07C017/361+19/08; C07C017/38; C07C211/63; C07D233/54C; C07D521/00B1C3; C07F009/30A1+F; C07F009/38A1+F; C07F009/54A1+D
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		C07C0211-00 [I,C]; C07C0211-63 [I,A]; C07D0233-00 [I,C]; C07D0233-54 [I,A]; C07D0521-00 [I,A]; C07D0521-00 [I,C]; C07F0009-00 [I,C]; C07F0009-30 [I,A]; C07F0009-38 [I,A]; C07F0009-54 [I,A]
	ECLA	B01F017/00R; B01J031/02D; B01J031/02E2; B01J031/02E4; C07C017/361+19/08; C07C017/38; C07C211/63; C07D233/54C; C07D521/00B1C3; C07F009/30A1+F; C07F009/38A1+F; C07F009/54A1+D
AU2003222764	IPCI	C07F0009-30 [ICM,7]; C07C0211-62 [ICS,7]; C07F0009-54 [ICS,7]; C07D0233-58 [ICS,7]; C07F0009-38 [ICS,7]; C07C0017-35 [ICS,7]; C07C0019-08 [ICS,7]
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	IPCR	B01J0031-02 [I,A]; B01J0031-02 [I,C]; C07C0017-00 [I,C]; C07C0017-361 [I,A]; C07C0017-38 [I,A]; C07C0211-00 [I,C]; C07C0211-63 [I,A]; C07D0233-00 [I,C]; C07D0233-54 [I,A]; C07D0521-00 [I,A]; C07D0521-00 [I,C]; C07F0009-00 [I,C]; C07F0009-30 [I,A]; C07F0009-38 [I,A]; C07F0009-54 [I,A]
	ECLA	B01F017/00R; B01J031/02D; B01J031/02E2; B01J031/02E4; C07C017/361+19/08; C07C017/38; C07C211/63; C07D233/54C; C07D521/00B1C3; C07F009/30A1+F; C07F009/38A1+F; C07F009/54A1+D
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JP2005522511	IPCI	C07C0017-361 [ICM,7]; C07C0019-08 [ICS,7]; C07F0009-30 [ICS,7]; C07F0009-38 [ICS,7]; C09K0003-00 [ICS,7]
	IPCR	B01J0031-02 [I,A]; B01J0031-02 [I,C]; C07C0017-00 [I,C]; C07C0017-361 [I,A]; C07C0017-38 [I,A]; C07C0211-00 [I,C]; C07C0211-63 [I,A]; C07D0233-00 [I,C]; C07D0233-54 [I,A]; C07D0521-00 [I,A]; C07D0521-00 [I,C]; C07F0009-00 [I,C]; C07F0009-30 [I,A]; C07F0009-38 [I,A]; C07F0009-54 [I,A]
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US2005222411	IPCI	C07F0009-28 [ICM,7]
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[I,C]; C07D0233-54 [I,A]; C07D0521-00 [I,A]; C07D0521-00 [I,C]; C07F0009-00 [I,C]; C07F0009-30 [I,A]; C07F0009-38 [I,A]; C07F0009-54 [I,A]

NCL 544/224.000

ECLA B01F017/00R; B01J031/02D; B01J031/02E2; B01J031/02E4; C07C017/361+19/08; C07C017/38; C07C211/63; C07D233/54C; C07D521/00B1C3; C07F009/30A1+F; C07F009/38A1+F; C07F009/54A1+D

ZA2004009161 IPCI C07F [ICM,7]; C07C [ICS,7]; C07D [ICS,7]

ECLA B01J031/02D; B01J031/02E2; B01J031/02E4; C07C017/361+19/08; C07C017/38; C07C211/63; C07D233/54C; C07D521/00B1C3; C07F009/30A1+F; C07F009/38A1+F; C07F009/54A1+D

OS CASREACT 139:323660; MARPAT 139:323660

AB Monohydro(perfluoro)alkanes, bis(perfluoroalkyl)phosphinates, and perfluoroalkylphosphonates, useful as ionic liqs., tensides, or phase-transfer catalysts (no data), are prepared by treating at least 1 perfluoroalkylphosphorane (CnF2n+1)mPF5-m (1≤n≤8, preferably 1≤n≤4; m = 1-3) with at least 1 base in a suitable reaction medium, preferably H2O or a mixture of H2O with ≥1 organic solvent such as alcs., preferably MeOH, EtOH or iso-PrOH, or a mixture of at least 2 of these alcs. More specifically, monohydro(perfluoro)alkanes are prepared by treating at least 1 perfluoroalkylphosphorane with at least 1 base or organometallic compound in a suitable medium; bases may be organic or inorg., preferably alkali metal hydroxides such as LiOH, LiOH.H2O, NaOH or KOH or alkaline earth hydroxides such as Ba(OH)2, as Ba(OH)2.8H2O or Ca(OH)2. Bis(perfluoroalkyl)phosphinates and perfluoroalkylphosphonates are prepared by reaction of ≥1 perfluoroalkylphosphorane with ≥1 base in a suitable medium so that in addition to the monohydro(perfluoro)alkanes the phosphinates and phosphonates are prepared either directly or after isolation by salt formation or by subsequent treatment with an acid, preferably H2SO4, to give the corresponding phosphinic or phosphonic acids followed by neutralization, preferably with organic bases such as ammonium, phosphonium, sulfonium, pyridinium, pyridazinium, pyrimidinium, pyrazinium, imidazolium, pyrazolium, thiazolium, oxazolium or triazolium salts. In an example, treating 59.9 mmol (C2F5)3PF2 with 185.4 mmol KOH in 330 cm3 H2O gave 92.8% gaseous C2F5H, along with, after workup, 93.2% (C2F5)2P(O)OK.

ST perfluoroalkane phosphinate phosphonate perfluoroalkyl prepn process; phosphorane perfluoroalkyl reaction base process

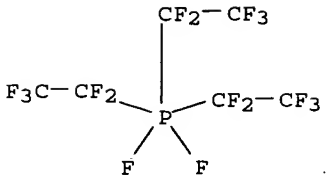
IT Alkanes, preparation
RL: SPN (Synthetic preparation); PREP (Preparation)
(fluoro, perfluoroalkanes; preparation of monohydro(perfluoro)alkanes, bis(perfluoroalkyl)phosphinates and perfluoroalkylphosphonates by treatment of perfluoroalkylphosphoranes with bases)

IT Phosphoranes
RL: RCT (Reactant); RACT (Reactant or reagent)
(perfluoroalkyl; preparation of monohydro(perfluoro)alkanes, bis(perfluoroalkyl)phosphinates and perfluoroalkylphosphonates by treatment of perfluoroalkylphosphoranes with bases)

IT Ionic liquids
Phase transfer catalysts
Surfactants
(preparation of monohydro(perfluoro)alkanes, bis(perfluoroalkyl)phosphinates and perfluoroalkylphosphonates by treatment of perfluoroalkylphosphoranes with bases)

IT Alkali metal hydroxides
Alkaline earth hydroxides
Amines, reactions
Bases, reactions
Onium compounds
Organometallic compounds
Phosphines
RL: RCT (Reactant); RGT (Reagent); RACT (Reactant or reagent)
(preparation of monohydro(perfluoro)alkanes, bis(perfluoroalkyl)phosphinates and perfluoroalkylphosphonates by treatment of

perfluoroalkylphosphoranes with bases)
IT Alcohols, uses
RL: NUU (Other use, unclassified); USES (Uses)
(solvents; preparation of monohydro(perfluoro)alkanes, bis(perfluoroalkyl)phosphinates and perfluoroalkylphosphonates by treatment of perfluoroalkylphosphoranes with bases)
IT 65039-09-0, 1-Ethyl-3-methylimidazolium chloride **91543-32-7**, Difluorotris(pentafluoroethyl)phosphorane **91543-33-8**, Difluorotris(n-heptafluoropropyl)phosphorane **91543-34-9**, Difluorotris(nonafluorobutyl)phosphorane **115421-80-2**, Trifluorobis(nonafluorobutyl)phosphorane
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of monohydro(perfluoro)alkanes, bis(perfluoroalkyl)phosphinates and perfluoroalkylphosphonates by treatment of perfluoroalkylphosphoranes with bases)
IT 77-98-5, Tetraethylammonium hydroxide 1305-62-0, Calcium hydroxide, reactions 1310-58-3, Potassium hydroxide, reactions 1310-65-2, Lithium hydroxide 1310-66-3, Lithium hydroxide, monohydrate 1310-73-2, Sodium hydroxide, reactions 7664-93-9, Sulfuric acid, reactions 12230-71-6, Barium hydroxide octahydrate 14518-69-5, Tetrabutylphosphonium hydroxide 17194-00-2, Barium hydroxide
RL: RCT (Reactant); RGT (Reagent); RACT (Reactant or reagent)
(preparation of monohydro(perfluoro)alkanes, bis(perfluoroalkyl)phosphinates and perfluoroalkylphosphonates by treatment of perfluoroalkylphosphoranes with bases)
IT **103305-01-7P 613232-23-8P 615284-57-6P 615284-58-7P**
RL: RCT (Reactant); **SPN (Synthetic preparation)**; **PREP (Preparation)**; RACT (Reactant or reagent)
(preparation of monohydro(perfluoro)alkanes, bis(perfluoroalkyl)phosphinates and perfluoroalkylphosphonates by treatment of perfluoroalkylphosphoranes with bases)
IT 354-33-6P, Pentafluoroethane 375-17-7P, 1,1,1,2,2,3,3,4,4-Nonafluorobutane **103321-11-5P 277750-74-0P 615284-49-6P 615284-50-9P 615284-51-0P 615284-53-2P 615284-55-4P 615284-56-5P 615284-60-1P 615284-61-2P 615284-62-3P**
RL: **SPN (Synthetic preparation)**; **PREP (Preparation)**
(preparation of monohydro(perfluoro)alkanes, bis(perfluoroalkyl)phosphinates and perfluoroalkylphosphonates by treatment of perfluoroalkylphosphoranes with bases)
IT 64-17-5, Ethanol, uses 67-56-1, Methanol, uses 67-63-0, Isopropanol, uses 7732-18-5, Water, uses
RL: NUU (Other use, unclassified); USES (Uses)
(solvent; preparation of monohydro(perfluoro)alkanes, bis(perfluoroalkyl)phosphinates and perfluoroalkylphosphonates by treatment of perfluoroalkylphosphoranes with bases)
RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Bergman, E; JOURNAL OF ORGANIC CHEMISTRY 1958, V23(3), P476
(2) Gosling, K; JOURNAL OF THE CHEMICAL SOCIETY ` SECTION! A: INORGANIC, PHYSICAL, THEORETICAL 1968, 8, P1909 HCAPLUS
(3) Haszeldine, R; JOURNAL OF THE CHEMICAL SOCIETY 1953, P3761 HCAPLUS
(4) Kovaleva, T; JOURNAL OF GENERAL CHEMISTRY USSR 1990, V59(11), P2245
(5) Mahmood, T; INORGANIC CHEMISTRY 1986, V25(18), P3128 HCAPLUS
(6) Pavlenko, N; JOURNAL OF GENERAL CHEMISTRY USSR 1989, V59(3), P474
IT **91543-32-7**, Difluorotris(pentafluoroethyl)phosphorane
RL: **SPN (Synthetic preparation)**; **PREP (Preparation)**; **PREP (Preparation)**
(preparation of monohydro(perfluoro)alkanes, bis(perfluoroalkyl)phosphinates and perfluoroalkylphosphonates by treatment of perfluoroalkylphosphoranes with bases)
RN 91543-32-7 HCAPLUS
CN Phosphorane, difluorotris(pentafluoroethyl)- (9CI) (CA INDEX NAME)



L22 ANSWER 4 OF 4 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:837096 HCAPLUS
DN 139:323659
ED Entered STN: 24 Oct 2003
TI Simplified process for the production of bis(perfluoroalkyl)phosphinic acids and their salts by reaction of difluorotris- or trifluorobis(perfluoroalkyl)phosphoranes with hydrogen fluoride and subsequent heating
IN **Welz-Biermann, Urs**; **Ignatyev, Nikolai**; **Weiden, Michael**; Heider, Udo; **Kucheryna, Andriy**; **Willner, Helge**; **Sartori, Peter**
PA **Merck** Patent G.m.b.H., Germany
SO PCT Int. Appl., 35 pp.
CODEN: PIXXD2
DT Patent
LA German
IC ICM C07F-0009/30
ICS C07C-0211/62; C07F-0009/54; C07D-0233/58
CC 29-7 (Organometallic and Organometalloidal Compounds)
Section cross-reference(s): 46
FAN.CNT 1

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PI	WO2003087110	A1	20031023	2003WO-EP02740	20030317
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
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	DE--10216997	A1	20031030	2002DE-1016997	20020416
	CA---2482656	AA	20031023	2003CA-2482656	20030317
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	ZA2004009160	A	20050531	2004ZA-0009160	20041111
PRAI	2002DE-1016997	A	20020416		
	2003WO-EP02740	W	20030317		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
WO 2003087110	ICM	C07F-0009/30
	ICS	C07C-0211/62; C07F-0009/54; C07D-0233/58
	IPCI	C07F0009-30 [ICM,7]; C07C0211-62 [ICS,7]; C07F0009-54 [ICS,7]; C07D0233-58 [ICS,7]
	IPCR	B01J0031-02 [I,A]; B01J0031-02 [I,C]; C07C0211-00 [I,C]; C07C0211-63 [I,A]; C07D0233-00 [I,C];

		C07D0233-54 [I,A]; C07D0521-00 [I,A]; C07D0521-00 [I,C]; C07F0009-00 [I,C]; C07F0009-30 [I,A]; C07F0009-54 [I,A]
	ECLA	B01F017/00R; B01J031/02D; B01J031/02E; C07C211/63; C07D233/54C; C07D521/00B1C3; C07F009/30A1+F; C07F009/54A7
DE--10216997	IPCI	C07F0009-30 [ICM,7]; B01J0031-02 [ICS,7]; B01F0017-14 [ICS,7]; C11D0003-36 [ICS,7]
	IPCR	B01J0031-02 [I,A]; B01J0031-02 [I,C]; C07C0211-00 [I,C]; C07C0211-63 [I,A]; C07D0233-00 [I,C]; C07D0233-54 [I,A]; C07D0521-00 [I,A]; C07D0521-00 [I,C]; C07F0009-00 [I,C]; C07F0009-30 [I,A]; C07F0009-54 [I,A]
	ECLA	B01F017/00R; B01J031/02D; B01J031/02E; C07C211/63; C07D233/54C; C07D521/00B1C3; C07F009/30A1+F; C07F009/54A7
CA---2482656	IPCI	C07F0009-30 [ICM,7]; C07F0009-54 [ICS,7]; C07D0233-58 [ICS,7]; C07C0211-62 [ICS,7]
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EP---1495035	IPCI	C07F0009-30 [ICM,7]; C07C0211-62 [ICS,7]; C07F0009-54 [ICS,7]; C07D0233-58 [ICS,7]
	IPCR	B01J0031-02 [I,A]; B01J0031-02 [I,C]; C07C0211-00 [I,C]; C07C0211-63 [I,A]; C07D0233-00 [I,C]; C07D0233-54 [I,A]; C07D0521-00 [I,A]; C07D0521-00 [I,C]; C07F0009-00 [I,C]; C07F0009-30 [I,A]; C07F0009-54 [I,A]
	ECLA	B01F017/00R; B01J031/02D; B01J031/02E; C07C211/63; C07D233/54C; C07D521/00B1C3; C07F009/30A1+F; C07F009/54A7
BR2003009222	IPCI	C07F0009-30 [ICM,7]; C07C0211-62 [ICS,7]; C07F0009-54 [ICS,7]; C07D0233-58 [ICS,7]
	IPCR	B01J0031-02 [I,A]; B01J0031-02 [I,C]; C07C0211-00 [I,C]; C07C0211-63 [I,A]; C07D0233-00 [I,C]; C07D0233-54 [I,A]; C07D0521-00 [I,A]; C07D0521-00 [I,C]; C07F0009-00 [I,C]; C07F0009-30 [I,A]; C07F0009-54 [I,A]
	ECLA	B01F017/00R; B01J031/02D; B01J031/02E; C07C211/63; C07D233/54C; C07D521/00B1C3; C07F009/30A1+F; C07F009/54A7
CN---1646546	IPCI	C07F0009-30 [ICM,7]; C07C0211-62 [ICS,7]; C07F0009-54 [ICS,7]; C07D0233-58 [ICS,7]
JP2005522510	IPCI	C07F0009-34 [ICM,7]; B01J0031-02 [ICS,7]; C07C0211-07 [ICS,7]; C07C0211-12 [ICS,7]; C07C0211-63 [ICS,7]
	IPCR	B01J0031-02 [I,A]; B01J0031-02 [I,C]; C07C0211-00 [I,C]; C07C0211-63 [I,A]; C07D0233-00 [I,C]; C07D0233-54 [I,A]; C07D0521-00 [I,A]; C07D0521-00 [I,C]; C07F0009-00 [I,C]; C07F0009-30 [I,A]; C07F0009-54 [I,A]
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4G069/BE34A; 4G069/BE34C; 4G069/BE38C; 4G069/BE41C; 4G069/BE46C; 4G069/FA01; 4G069/FB29; 4G069/FB54; 4G069/FC02; 4G069/FC07; 4G069/FC10; 4H006/AA01; 4H006/AB40; 4H006/AB68; 4H050/AA02; 4H050/AA03; 4H050/AB40; 4H050/AB68

US2005256334 IPCI C07F0009-22 [ICM,7]
IPCR B01J0031-02 [I,A]; B01J0031-02 [I,C]; C07C0211-00 [I,C]; C07C0211-63 [I,A]; C07D0233-00 [I,C]; C07D0233-54 [I,A]; C07D0521-00 [I,A]; C07D0521-00 [I,C]; C07F0009-00 [I,C]; C07F0009-30 [I,A]; C07F0009-54 [I,A]
NCL 562/008.000
ECLA B01F017/00R; B01J031/02D; B01J031/02E; C07C211/63; C07D233/54C; C07D521/00B1C3; C07F009/30A1+F; C07F009/54A7

ZA2004009160 IPCI C07F [ICM,7]; C07C [ICS,7]; C07D [ICS,7]
ECLA B01F017/00R; B01J031/02D; B01J031/02E; C07C211/63; C07D233/54C; C07D521/00B1C3; C07F009/30A1+F; C07F009/54A7

OS CASREACT 139:323659; MARPAT 139:323659

AB Bis(perfluoroalkyl)phosphinic acids are prepared by reaction of at least one difluorotris(perfluoroalkyl)phosphorane or at least one trifluorobis(perfluoroalkyl)phosphorane (CnF2n+1)mPF5-m (1≤n≤8, preferably 1≤n≤4; m = 2, 3) with HF in a suitable reaction medium, preferably water or a water-based mixture, and then the reaction mixture is heated at room temperature-150°, preferably at 135-140° for 18-22 h. Salts of the bis(perfluoroalkyl)phosphinic acids, preferably partially or peralkylated ammonium, phosphonium, sulfonium, or (un)substituted pyridinium, pyridazinium, pyrimidinium, pyrazinium, imidazolium, pyrazolium, thiazolium, oxazolium and triazolium salts, are prepared by subsequent neutralization in presence of bases, preferably hydroxides, oxides, hydrides, amides, carbonates, phosphines or amines, and are useful as ionic liqs. or as phase-transfer catalysts or as tensides (no data). In an example, a mixture of 58.6 mmol HF as a 40% by weight solution in H2O and 3.53 g H2O (294 mmol H2O total) is prepared and cooled with an ice bath before being treated with 58.7 mmol (C2F5)3PF2 and stirred 3 min, whereupon the mixture is stirred 15 min at room temperature, then heated at 135-140° at reflux for 14 h, treated with addnl. 4.83 g H2O and heated 6 h at reflux to afford after workup 86.5% (C2F5)2P(O)OH; salts of the latter are prepared in nearly quant. yields by treatment with, e.g., Et4NOH, K2CO3 or 1,6-diaminohexane.

ST phosphinic acid salt perfluoroalkyl prepn process; phosphorane fluoro perfluoroalkyl reaction hydrogen fluoride process

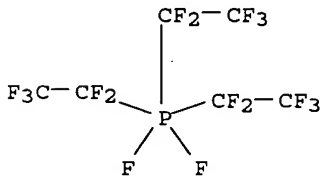
IT Phosphorus acids
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(bis(perfluoroalkyl)phosphinic acids; preparation of bis(perfluoroalkyl)phosphinic acids by reaction of difluorotris- or trifluorobis(perfluoroalkyl)phosphoranes with HF followed by heating, with subsequent conversion to salts)

IT Phosphoranes
RL: RCT (Reactant); RACT (Reactant or reagent)
(perfluoroalkyl-fluoro; preparation of bis(perfluoroalkyl)phosphinic acids by reaction of difluorotris- or trifluorobis(perfluoroalkyl)phosphoranes with HF followed by heating, with subsequent conversion to salts)

IT Ionic liquids
Phase transfer catalysts
Surfactants
(preparation of bis(perfluoroalkyl)phosphinic acids by reaction of difluorotris- or trifluorobis(perfluoroalkyl)phosphoranes with HF followed by heating, with subsequent conversion to salts)

IT Amines, reactions
Bases, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of bis(perfluoroalkyl)phosphinic acids by reaction of difluorotris- or trifluorobis(perfluoroalkyl)phosphoranes with HF

followed by heating, with subsequent conversion to salts)
IT 102-86-3, Tri-n-hexylamine 124-09-4, 1,6-Diaminohexane, reactions
1100-88-5, Benzyl(triphenyl)phosphonium chloride 7664-39-3, Hydrogen
fluoride, reactions 79917-90-1, 1-Butyl-3-methylimidazolium chloride
91543-32-7 91543-33-8 91543-34-9
115421-80-2
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of bis(perfluoroalkyl)phosphinic acids by reaction of
difluorotris- or trifluorobis(perfluoroalkyl)phosphoranes with HF
followed by heating, with subsequent conversion to salts)
IT **52299-25-9P 103321-11-5P 613232-23-8P**
RL: RCT (Reactant); **SPN (Synthetic preparation)**; **PREP**
(Preparation); RACT (Reactant or reagent)
(preparation of bis(perfluoroalkyl)phosphinic acids by reaction of
difluorotris- or trifluorobis(perfluoroalkyl)phosphoranes with HF
followed by heating, with subsequent conversion to salts)
IT **613232-21-6P 613232-25-0P 613232-26-1P**
613232-27-2P 613232-28-3P 613232-29-4P
613232-30-7P
RL: **SPN (Synthetic preparation)**; **PREP (Preparation)**
(preparation of bis(perfluoroalkyl)phosphinic acids by reaction of
difluorotris- or trifluorobis(perfluoroalkyl)phosphoranes with HF
followed by heating, with subsequent conversion to salts)
RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Mahmood, T; INORGANIC CHEMISTRY 1988, V27(17), P2913 HCAPLUS
(2) Merck Patent Gmbh; WO--03002579 A 2003 HCAPLUS
(3) Pavlenko, N; JOURNAL OF GENERAL CHEMISTRY USSR 1989, V59(3), P474
(4) Ya, S; SU----498311 T 1976 HCAPLUS
(5) Yagupol, S; JOURNAL OF GENERAL CHEMISTRY OF THE USSR, PART 1 1984, V54(4),
P692
IT **91543-32-7**
RL: **SPN (Synthetic preparation)**; **PREP (Preparation)**;
PREP (Preparation)
(preparation of bis(perfluoroalkyl)phosphinic acids by reaction of
difluorotris- or trifluorobis(perfluoroalkyl)phosphoranes with HF
followed by heating, with subsequent conversion to salts)
RN 91543-32-7 HCAPLUS
CN Phosphorane, difluorotris(pentafluoroethyl)- (9CI) (CA INDEX NAME)



=> d all hitstr l23 tot

L23 ANSWER 1 OF 2 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1989:192925 HCAPLUS
DN 110:192925
ED Entered STN: 26 May 1989
TI Phosphorus derivatives of perfluoropropene
AU Von Allwoerden, Udo; Roeschenthaler, Gerd Volker
CS Fachbereich 2, Univ. Bremen, Bremen, D-2800/33, Fed. Rep. Ger.
SO Chemiker-Zeitung (1988), 112(2), 69-76
CODEN: CMKZAT; ISSN: 0009-2894
DT Journal
LA German
CC 29-7 (Organometallic and Organometalloidal Compounds)

OS CASREACT 110:192925

AB Secondary phosphines R12PH (R1 = Me, Et) and perfluoropropene react to give 1,2,3,3,3-pentafluorophosphines which are oxidized by SF4 (for R1 = Me), (F3C)2CO (for R1 = Me) and Cl2 (for R1 = Et) to form phosphoranes. No reaction takes place at the double bond. The silyl phosphites (R2O)2POSiMe3 (R2 = SiMe3, Et) and perfluoropropene yield 1,2,3,3,3-pentafluoropropenylphosphonates (losing fluorotrimethylsilane) precursors for the free phosphonic acid (for R2 = SiMe3), the phosphonic acid dichloride (for R2 = SiMe3) and the 2-amino derivs. (for R2 = Et). Tertiary phosphines MenPPh3-n formally insert into the 1-F-C bond to furnish monofluorophosphoranes whose thermal stability increase with increasing n. Whereas a phosphorane is also obtained in the case of triethylphosphine, tri-tert-butylphosphine yields (Me3C)2PCF:CFCF3. The pyrolysis of Me3P(F)CF:CFCF3, a versatile nonoxidizing fluorinating agent, gives 1,2,3,3,3-pentafluoropropene in good yield.

ST phosphine secondary tertiary reaction perfluoropropene; fluorophosphine; fluoropropenylphosphonate; phosphorus perfluoropropene deriv

IT 7704-34-9, Sulfur, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(attempted reaction of, with pentafluoropropenyldimethylphosphine)

IT 67-68-5, Dimethylsulfoxide, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(attempted reaction of, with pentafluoropropenyldimethylphsophine)

IT 661-42-7P
RL: FORM (Formation, nonpreparative); PREP (Preparation)
(formation of, by chlorination of pentapropylphenyldimethylphosphorane)

IT 420-56-4P
RL: FORM (Formation, nonpreparative); PREP (Preparation)
(formation of, by pyrolysis of pentafluoropropenylphosphonic acid bis(trimethylsilyl)ester)

IT 753-70-8P
RL: FORM (Formation, nonpreparative); PREP (Preparation)
(formation of, by pyrolysis of pentafluoropropenyltrimethylphosphorane in presence of hexane)

IT 97994-17-7P
RL: FORM (Formation, nonpreparative); PREP (Preparation)
(formation of, by reaction of dimethylphosphine with perfluoropropene)

IT 25940-85-6P
RL: FORM (Formation, nonpreparative); PREP (Preparation)
(formation of, by reaction of dinethylphenylphosphine with perfluoropropene)

IT 120154-70-3P
RL: FORM (Formation, nonpreparative); PREP (Preparation)
(formation of, by reaction of tri-tert-butylphosphine with perfluoropropene)

IT 7783-60-0
RL: RCT (Reactant); RACT (Reactant or reagent)
(oxidation by, of phosphoranes)

IT 120154-68-9P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and attempted reaction of, with perfluoropropene)

IT 120154-65-6P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and chlorination of)

IT 104824-57-9P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and reaction of, with boron trifluoride)

IT 57048-51-8P 97994-15-5P 97994-16-6P 120154-74-7P 120154-75-8P 120154-76-9P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and reactions of)

IT 5595-10-8P 7647-19-0DP, reaction products with

(Z)-1,2,3,3,3-pentafluoropropenylphosphonic acid bis(trimethylsilyl) ester 14003-57-7P 14003-62-4P 56577-88-9P 97994-16-6DP, reaction products with pentafluorophosphorane 104824-56-8P 105194-52-3P 120154-64-5P 120154-66-7P 120154-67-8P 120154-69-0P 120154-71-4P 120154-72-5P 120154-73-6P **120154-77-0P** 120154-78-1P 120154-79-2P 120154-80-5P 120154-81-6P 120154-82-7P 120154-83-8P 120154-84-9P 120154-85-0P 121257-98-5P
RL: **SPN (Synthetic preparation)**; **PREP (Preparation)**
(preparation of)

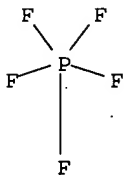
IT 25512-62-3, Cyclohexenone
RL: PROC (Process)
(pyrolysis of pentafluoropropenyltrimethylphosphorane in presence of)

IT 124-40-3, Dimethylamine, reactions 554-70-1, Triethylphosphine 594-09-2, Trimethylphosphine 627-49-6, Diethylphosphine 672-66-2, Dimethylphenylphosphine 676-59-5, Dimethylphosphine 1486-28-8, Diphenylmethylphosphine 1795-31-9, Tris(trimethylsilyl)phosphite 13716-12-6, Tri-tert-butylphosphine 13716-45-5
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with perfluoropropene)

IT 116-15-4, Perfluoropropene
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with secondary and tertiary phosphines)

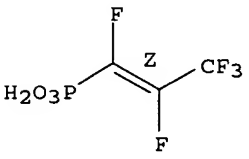
IT **7647-19-0DP**, reaction products with (Z)-1,2,3,3,3-pentafluoropropenylphosphonic acid bis(trimethylsilyl) ester **120154-77-0P**
RL: **SPN (Synthetic preparation)**; **PREP (Preparation)**
(preparation of)

RN 7647-19-0 HCAPLUS
CN Phosphorane, pentafluoro- (9CI) (CA INDEX NAME)



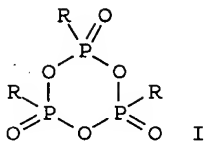
RN 120154-77-0 HCAPLUS
CN Phosphonic acid, (1,2,3,3,3-pentafluoro-1-propenyl)-, (Z)- (9CI) (CA INDEX NAME)

Double bond geometry as shown.



L23 ANSWER 2 OF 2 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1986:626810 HCAPLUS
DN 105:226810
ED Entered STN: 26 Dec 1986
TI New perfluoroalkylphosphonic and bis(perfluoroalkyl)phosphinic acids and their precursors
AU Mahmood, Tariq; Shreeve, Jean'ne M.
CS Dep. Chem., Univ. Idaho, Moscow, ID, 83843, USA
SO Inorganic Chemistry (1986), 25(18), 3128-31
CODEN: INOCAJ; ISSN: 0020-1669
DT Journal

LA English
CC 29-7 (Organometallic and Organometalloidal Compounds)
OS CASREACT 105:226810
GI



I

AB Some new routes to the previously known acids R2P(O)OH and RP(O)(OH)2 (R = CF3, C4F9) as well as to the new acids (C2F5)2P(O)OH and C2F5P(O)(OH)2 are reported. In addition, several mixed chloro(perfluoroalkyl)phosphorus(III) and -(V) compds. were synthesized as reaction precursors, including (C2F5)2PCl3, C2F5PCl4, (C2F5)2PCl, C2F5PCl2, (C2F5)2P(O)Cl, and C2F5P(O)Cl2. Under certain conditions, when chlorophosphines are oxidized with excess NO2, acid anhydrides result, e.g., (C2F5)2P(O)OP(O)(C2F5)2 and cyclic anhydride I (R = C2F5).

ST fluoroalkylphosphonic acid; fluoroalkylphosphinic acid; phosphonic acid fluoroalkyl; phosphinic acid fluoroalkyl; cyclic phosphorus anhydride

IT 7782-50-5, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(chlorination by, of chlorophosphines)

IT 58431-34-8 **91543-34-9**
RL: RCT (Reactant); RACT (Reactant or reagent)
(hydrolysis of)

IT 10102-44-0, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(oxidation by, of chlorophosphines)

IT 432-04-2
RL: RCT (Reactant); RACT (Reactant or reagent)
(oxidation of)

IT 423-01-8P **52299-25-9P** 103304-95-6P 103304-96-7P 103304-97-8P 103304-99-0P 103305-00-6P
RL: RCT (Reactant); **SPN (Synthetic preparation)**; **PREP (Preparation)**; RACT (Reactant or reagent)
(preparation and hydrolysis of)

IT 17426-84-5P 35449-89-9P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and reaction of, with nitrogen dioxide)

IT 35449-86-6P 35449-87-7P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and reaction of, with silver chloride)

IT **374-09-4P 422-94-6P 52299-24-8P** 103304-98-9P **103305-01-7P 103321-11-5P**
RL: **SPN (Synthetic preparation)**; **PREP (Preparation)**
(preparation of)

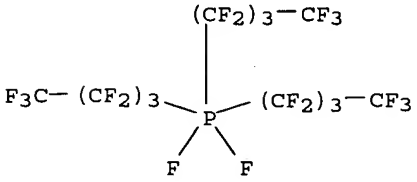
IT 7783-90-6, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with iodophosphines)

IT 7723-14-0, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with pentafluoroethyl iodide)

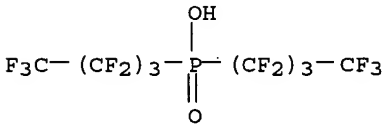
IT 354-64-3
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with phosphorus)

IT **91543-34-9**

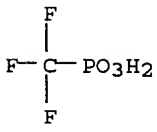
RL: RCT (Reactant); RACT (Reactant or reagent)
(hydrolysis of)
RN 91543-34-9 HCAPLUS
CN Phosphorane, difluorotris(nonafluorobutyl)- (9CI) (CA INDEX NAME)



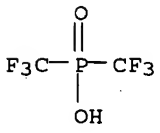
IT **52299-25-9P**
RL: RCT (Reactant); **SPN (Synthetic preparation); PREP (Preparation)**; RACT (Reactant or reagent)
(preparation and hydrolysis of)
RN 52299-25-9 HCAPLUS
CN Phosphinic acid, bis(nonafluorobutyl)- (9CI) (CA INDEX NAME)



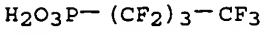
IT **374-09-4P 422-94-6P 52299-24-8P**
103305-01-7P 103321-11-5P
RL: **SPN (Synthetic preparation); PREP (Preparation)**
(preparation of)
RN 374-09-4 HCAPLUS
CN Phosphonic acid, (trifluoromethyl)- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



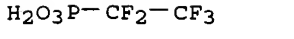
RN 422-94-6 HCAPLUS
CN Phosphinic acid, bis(trifluoromethyl)- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 52299-24-8 HCAPLUS
CN Phosphonic acid, (nonafluorobutyl)- (9CI) (CA INDEX NAME)



RN 103305-01-7 HCAPLUS
CN Phosphonic acid, (pentafluoroethyl)- (9CI) (CA INDEX NAME)



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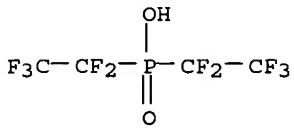
RN 103321-11-5 HCAPLUS
CN Phosphinic acid, bis(pentafluoroethyl)- (9CI) (CA INDEX NAME)



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FILE CONTENT:1840 - 23 Apr 2006 VOL 144 ISS 17

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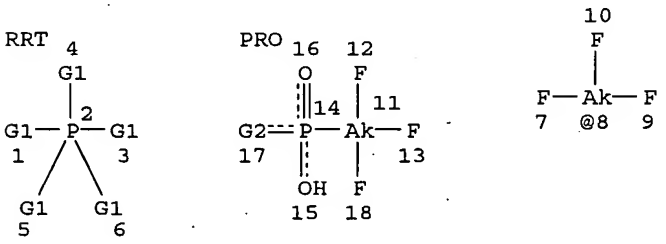
This file contains CAS Registry Numbers for easy and accurate substance identification.

=> d que sta l32
L30 STR



VAR G1=F/8
VAR G2=OH/8
NODE ATTRIBUTES:
DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 18

STEREO ATTRIBUTES: NONE
L32 3 SEA FILE=CASREACT SSS FUL L30 (16 REACTIONS)

100.0% DONE 10818 VERIFIED 16 HIT RXNS 3 DOCS
SEARCH TIME: 00.00.36

=> d bib abs crd retable l32 tot

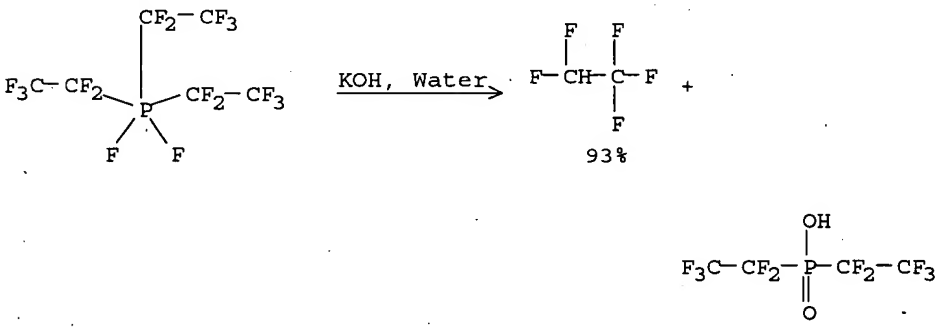
L32 ANSWER 1 OF 3 CASREACT COPYRIGHT 2006 ACS on STN
AN 139:323660 CASREACT
TI Process for production of monohydro(perfluoro)alkanes, bis(perfluoroalkyl)phosphinates and perfluoroalkylphosphonates by treatment of perfluoroalkylphosphoranes with bases
IN Ignatyev, Nikolai; Weiden, Michael; Welz-Biermann, Urs; Heider, Udo; Sartori, Peter; Kucheryna, Andriy; Willner, Helge
PA Merck Patent G.m.b.H., Germany
SO PCT Int. Appl., 49 pp.
CODEN: PIXXD2
DT Patent
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO2003087111	A1	20031023	2003WO-EP02744	20030317
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	DE--10220547	A1	20031106	2002DE-1020547	20020508
	CA---2482657	AA	20031023	2003CA-2482657	20030317
	AU2003222764	A1	20031027	2003AU-0222764	20030317
	EP---1495036	A1	20050112	2003EP-0718689	20030317
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
	BR2003009221	A	20050209	2003BR-0009221	20030317
	CN---1646545	A	20050727	2003CN-0808435	20030317
	JP2005522511	T2	20050728	2003JP-0584067	20030317
	US2005222411	A1	20051006	2004US-0511171	20041014
	ZA2004009161	A	20050531	2004ZA-0009161	20041111
PRAI	2002DE-1016995	20020416			
	2002DE-1020547	20020508			
	2003WO-EP02744	20030317			

OS MARPAT 139:323660
AB Monohydro(perfluoro)alkanes, bis(perfluoroalkyl)phosphinates, and perfluoroalkylphosphonates, useful as ionic liqs., tensides, or phase-transfer catalysts (no data), are prepared by treating at least 1 perfluoroalkylphosphorane (CnF2n+1)mPF5-m (1≤n≤8, preferably 1≤n≤4; m = 1-3) with at least 1 base in a suitable reaction medium, preferably H2O or a mixture of H2O with ≥1 organic solvent such as alcs., preferably MeOH, EtOH or iso-PrOH, or a mixture of at least 2 of these alcs. More specifically, monohydro(perfluoro)alkanes are prepared by treating at least 1 perfluoroalkylphosphorane with at least 1 base or organometallic compound in a suitable medium; bases may be organic or inorg., preferably alkali metal hydroxides such as LiOH, LiOH.H2O, NaOH or KOH or alkaline earth hydroxides such as Ba(OH)2, as Ba(OH)2.8H2O or Ca(OH)2.

Bis(perfluoroalkyl)phosphinates and perfluoroalkylphosphonates are prepared by reaction of ≥1 perfluoroalkylphosphorane with ≥1 base in a suitable medium so that in addition to the monohydro(perfluoro)alkanes the phosphinates and phosphonates are prepared either directly or after isolation by salt formation or by subsequent treatment with an acid, preferably H_2SO_4, to give the corresponding phosphinic or phosphonic acids followed by neutralization, preferably with organic bases such as ammonium, phosphonium, sulfonium, pyridinium, pyridazinium, pyrimidinium, pyrazinium, imidazolium, pyrazolium, thiazolium, oxazolium or triazolium salts. In an example, treating 59.9 mmol $(C_2F_5)_3PF_2$ with 185.4 mmol KOH in 330 cm3 H_2O gave 92.8% gaseous C_2F_5H, along with, after workup, 93.2% $(C_2F_5)_2P(O)OK$.

RX(1) OF 16

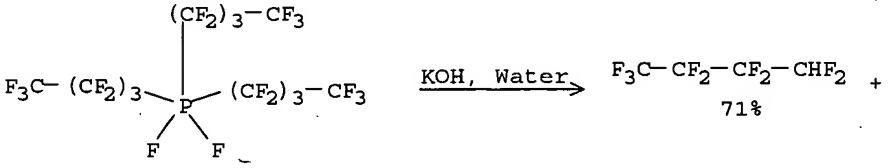


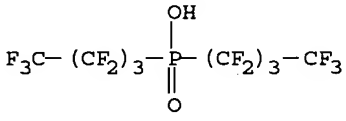
K

93%

CON: STAGE(1) room temperature; room temperature -> -5 deg C; 15 minutes, -5 deg C; -5 deg C -> room temperature

RX(2) OF 16



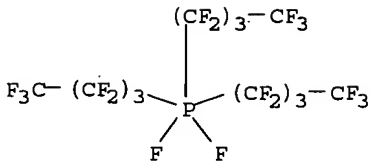


K

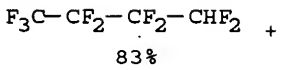
63%

CON: STAGE(1) room temperature; room temperature -> 0 deg C; 3 minutes, 0 deg C; 0 deg C -> room temperature; 8 hours, room temperature; 8 hours, reflux

RX(3) OF 16



KOH, Water



83%

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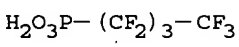
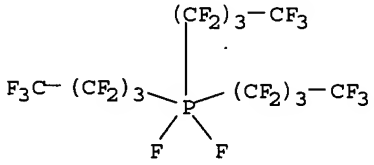


2 K

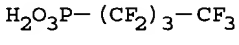
79%

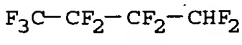
CON: STAGE(1) room temperature; room temperature -> 80 deg C; 20 minutes, 80 deg C; 2 hours, 150 deg C

RX(4) OF 16



LiOH.H2O, Water





56%

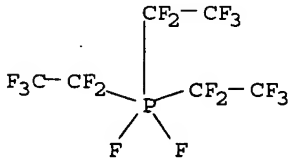
+

2 Li

88%

CON: STAGE(1) room temperature; room temperature -> 80 deg C; 30 minutes, 80 deg C; 2 hours, 150 deg C

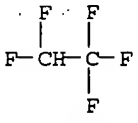
RX(5) OF 16



KOH, Water

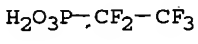
96%

+



95%

+

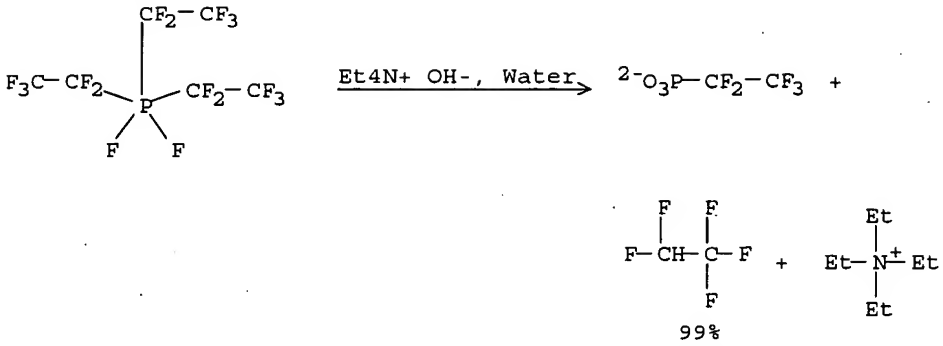


2 K

96%

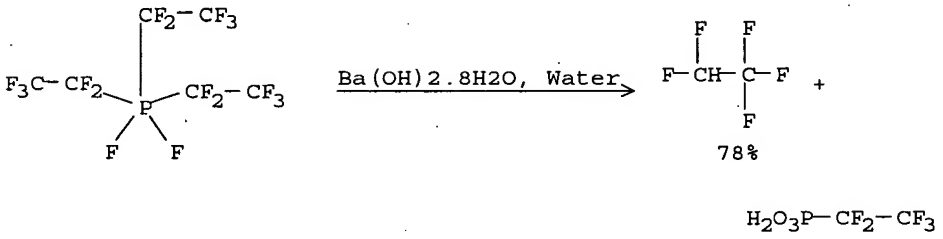
CON: STAGE(1) room temperature; room temperature -> 70 deg C; 60 minutes, 70 deg C; 1 hour, 120 deg C

RX(6) OF 16



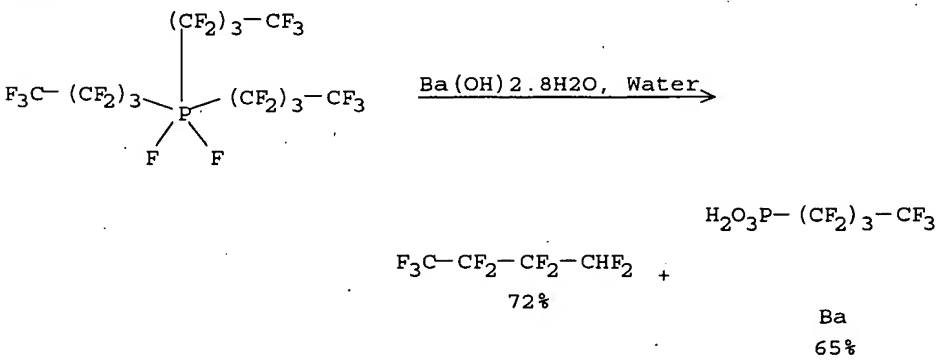
CON: STAGE(1) 1 hour, room temperature; 30 minutes, 80 deg C

RX(7) OF 16



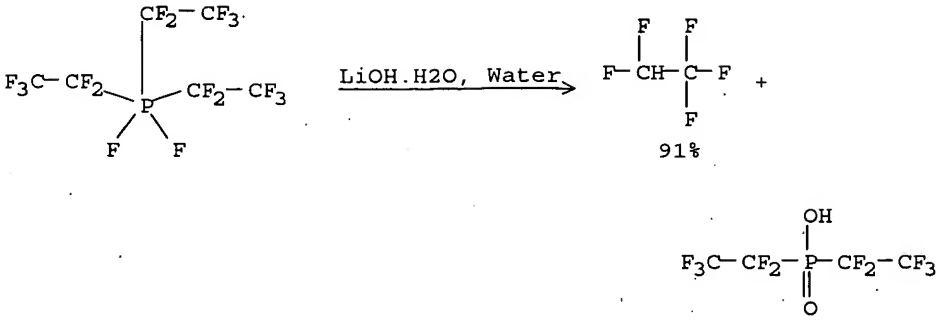
CON: STAGE(1) room temperature; room temperature -> 70 deg C;
30 minutes, 70 deg C; 2 hours, 150 deg C

RX(8) OF 16



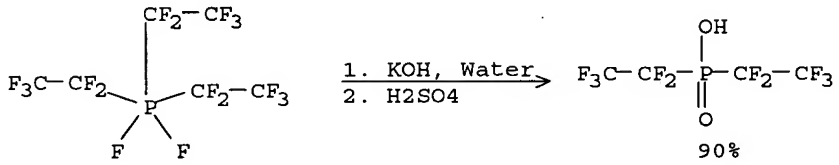
CON: STAGE(1) room temperature; room temperature -> 80 deg C;
30 minutes, 80 deg C; 1 hour, 120 deg C

RX(13) OF 16



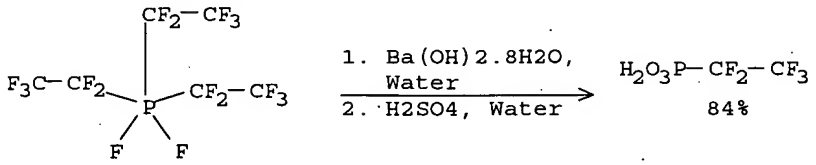
CON: STAGE(1) room temperature; room temperature -> -10 deg C;
15 minutes, -10 deg C; -10 deg C -> room temperature

RX(15) OF 16 - 2 STEPS



NOTE: 2) low pressure, distn.
CON: STEP(1.1) room temperature; room temperature -> -5 deg C;
15 minutes, -5 deg C; -5 deg C -> room temperature
STEP(2) 120 deg C, 400 Pa

RX(16) OF 16 - 2 STEPS



CON: STEP(1.1) room temperature; room temperature -> 70 deg C;
30 minutes, 70 deg C; 2 hours, 150 deg C
STEP(2) room temperature

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Bergman, E	1958	23	476	JOURNAL OF ORGANIC C	
Gosling, K	1968		1909	JOURNAL OF THE CHEMI	CAPLUS
Haszeldine, R	1953		3761	JOURNAL OF THE CHEMI	CAPLUS
Kovaleva, T	1990	59	2245	JOURNAL OF GENERAL C	
Mahmood, T	1986	25	3128	INORGANIC CHEMISTRY	CAPLUS
Pavlenko, N	1989	59	474	JOURNAL OF GENERAL C	

L32 ANSWER 2 OF 3 CASREACT COPYRIGHT 2006 ACS on STN
AN 139:323659 CASREACT
TI Simplified process for the production of bis(perfluoroalkyl)phosphinic acids and their salts by reaction of difluorotris- or trifluorobis(perfluoroalkyl)phosphoranes with hydrogen fluoride and subsequent heating
IN Welz-Biermann, Urs; Ignatyev, Nikolai; Weiden, Michael; Heider, Udo; Kucheryna, Andriy; Willner, Helge; Sartori, Peter
PA Merck Patent G.m.b.H., Germany
SO PCT Int. Appl., 35 pp.
CODEN: PIXXD2
DT Patent
LA German
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO2003087110	A1	20031023	2003WO-EP02740	20030317
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EP---1495035	A1	20050112	2003EP-0712030	20030317
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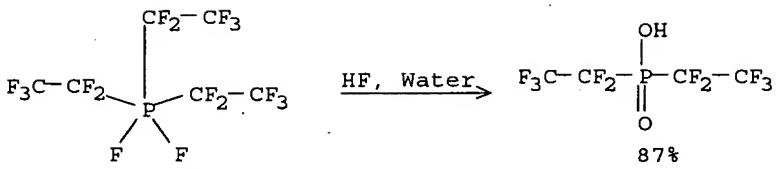
US2005256334	A1	20051117	2004US-0511157	20041014
ZA2004009160	A	20050531	2004ZA-0009160	20041111

PRAI 2002DE-1016997 20020416
2003WO-EP02740 20030317
OS MARPAT 139:323659
AB Bis(perfluoroalkyl)phosphinic acids are prepared by reaction of at least one difluorotris(perfluoroalkyl)phosphorane or at least one trifluorobis(perfluoroalkyl)phosphorane (CnF2n+1)mPF5-m (1≤n≤8, preferably 1≤n≤4; m = 2, 3) with HF in a suitable reaction medium, preferably water or a water-based mixture, and then the reaction mixture is heated at room temperature-150°, preferably at 135-140° for 18-22 h. Salts of the bis(perfluoroalkyl)phosphinic acids, preferably partially or peralkylated ammonium, phosphonium, sulfonium, or (un)substituted pyridinium, pyridazinium, pyrimidinium, pyrazinium, imidazolium, pyrazolium, thiazolium, oxazolium and triazolium salts, are prepared by subsequent neutralization in presence of bases, preferably hydroxides, oxides, hydrides, amides, carbonates, phosphines or amines, and are useful as ionic liqs. or as phase-transfer catalysts or as tensides (no data). In an example, a mixture of 58.6 mmol HF as a 40% by weight solution in H2O and 3.53 g H2O (294 mmol H2O total) is prepared and cooled with an ice bath before being treated with 58.7 mmol (C2F5)3PF2 and stirred 3 min, whereupon the mixture is stirred 15 min at room temperature, then heated at 135-140° at reflux for 14 h, treated with addnl. 4.83 g H2O and heated 6 h at reflux to afford after workup 86.5% (C2F5)2P(O)OH; salts of the latter are prepared in nearly quant. yields by treatment with, e.g., Et4NOH, K2CO3 or 1,6-diaminohexane.

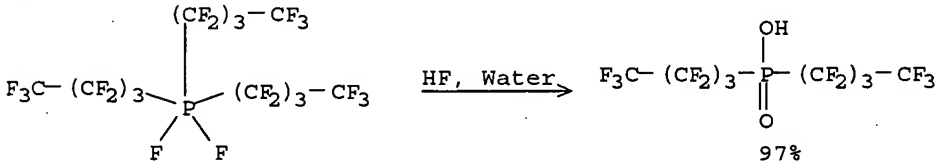
RX(1) OF 3



87%

NOTE: Heating at reflux 2nd stage
CON: STAGE(1) room temperature -> 0 deg C; 0 deg C; 3 minutes, 0 deg C; 15 minutes, room temperature; 14 hours, 135 - 140 deg C; 6 hours, 135 - 140 deg C

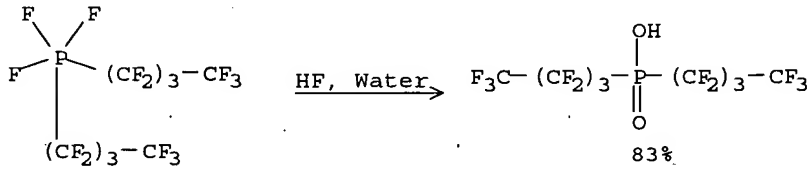
RX(2) OF 3



97%

NOTE: Heating at reflux 2nd stage
CON: STAGE(1) room temperature -> 0 deg C; 10 minutes, 0 deg C; 20 minutes, room temperature; 11.5 hours, 135 - 140 deg C; 8.5 hours, 135 - 140 deg C

RX(3) OF 3



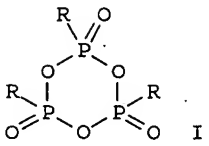
83%

NOTE: Heating at reflux 2nd stage
CON: STAGE(1) room temperature -> 0 deg C; 10 minutes, 0 deg C; 15 hours, room temperature; 35 hours, 110 deg C

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Mahmood, T	1988	27	2913	INORGANIC CHEMISTRY	CAPLUS
Merck Patent Gmbh	2003			WO--03002579 A	CAPLUS
Pavlenko, N	1989	59	474	JOURNAL OF GENERAL C	
Ya, S	1976			SU----498311 T	CAPLUS
Yagupol, S	1984	54	692	JOURNAL OF GENERAL C	

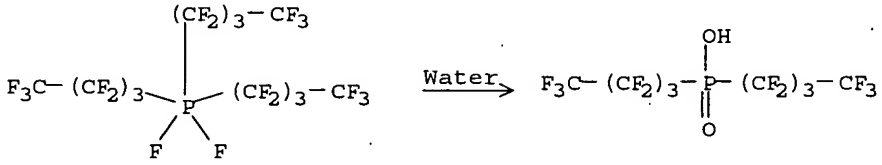
L32 ANSWER 3 OF 3 CASREACT COPYRIGHT 2006 ACS on STN
AN 105:226810 CASREACT
TI New perfluoroalkylphosphonic and bis(perfluoroalkyl)phosphinic acids and their precursors
AU Mahmood, Tariq; Shreeve, Jean'ne M.
CS Dep. Chem., Univ. Idaho, Moscow, ID, 83843, USA
SO Inorganic Chemistry (1986), 25(18), 3128-31
CODEN: INOCAJ; ISSN: 0020-1669
DT Journal
LA English
GI



I

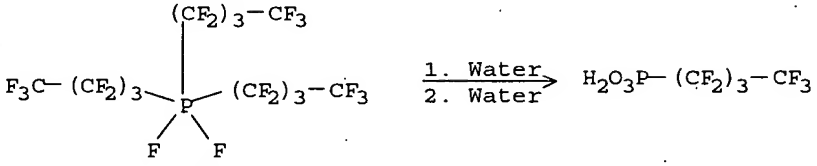
AB Some new routes to the previously known acids R2P(O)OH and RP(O)(OH)2 (R = CF3, C4F9) as well as to the new acids (C2F5)2P(O)OH and C2F5P(O)(OH)2 are reported. In addition, several mixed chloro(perfluoroalkyl)phosphorus(III) and -(V) compds. were synthesized as reaction precursors, including (C2F5)2PCl3, C2F5PCl4, (C2F5)2PCl, C2F5PCl2, (C2F5)2P(O)Cl, and C2F5P(O)Cl2. Under certain conditions, when chlorophosphines are oxidized with excess NO2, acid anhydrides result, e.g., (C2F5)2P(O)OP(O)(C2F5)2 and cyclic anhydride I (R = C2F5).

RX(16) OF 48



NOTE: potentially very exothermic

RX(32) OF 48 - 2 STEPS



NOTE: 1) potentially very exothermic

=> d his

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FILE 'HCAPLUS' ENTERED AT 16:04:48 ON 26 APR 2006

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L2 33 E4-8
E WEIDEN M/AU
L3 87 E3-4,E7-8
E WELZ BIERMANN U/AU
L4 48 E3-4
E WELZ U/AU
L5 1 E3
E BIERMANN U/AU
L6 20 E3-5
E SARTORI P/AU
L7 261 E3-4,E12
E KUCHERYNA A/AU
L8 16 E3,E7-9
E WILLNER H/AU
L9 269 E3,E5

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L10       32907 MERCK/CS,PA

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      FILE 'HCAPLUS' ENTERED AT 16:11:02 ON 26 APR 2006
L11             TRA L1 1- RN :       36 TERMS

      FILE 'REGISTRY' ENTERED AT 16:11:03 ON 26 APR 2006
L12           36 SEA L11
L13           21 L12 AND F/ELS
L14              STR
L15           11 L14
L16          338 L14 FULL
                 SAV TEM NWAO171F0/A L16
L17              STR
L18           50 L17
L19        60606 L17 FULL

      FILE 'HCAPLUS' ENTERED AT 16:33:02 ON 26 APR 2006
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L21            6 L20 AND L16 (L)PREP+NT/RL
L22            4 L21 AND L1-10
L23            2 L21 NOT L22
                 E PERFLUOROALK/CT
                 E E6+ALL
                 E E2
L24         3368 E3-4,E7-8
                 E E3+ALL
L25        30509 E7+OLD,NT
L26          432 L20 AND L24-25
L27            7 L20 AND L24-25(L)PREP+NT/RL
L28            0 L27 AND L1-10
L29            0 L27 AND L20 (L)RACT+NT/RL

      FILE 'CASREACT' ENTERED AT 16:41:56 ON 26 APR 2006
L30              STR L17
L31            0 L30
L32            3 L30 FULL

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